IDENTITY OF CULEX FITCHII FELT & YOUNG. — This is the form described as "*cantans* 2" by Mr. Knab and myself (Proc. ent. soc. Wash., vi, 143, 1904). Whether the European *cantans* Meig. really occurs in America at all is a question we are unable to decide at present, and if it does, it is as likely to be *fitchii* as the form "*cantans* 1." European larvæ must be compared.

THE EGGS OF CULEX TERRITANS WALKER.

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During the summer of 1903, in examining rain-barrels for mosquito material, egg-clusters were several times found upon the sides of the barrel some distance above the surface of the water. At first it was thought that these egg-boats had come into that situation by some disturbance of the water, but later a number of them were found in the same barrel and at different heights from the water — some of them six or eight inches above the water-level. It was also noticed that the longitudinal axis of the cluster was always vertical and there could be no doubt that the eggs were deposited in that situation. These egg-boats were easily detached and when placed in water floated in the ordinary manner of the eggs of *Culex pipiens* and *Culex restuans* and the eggs hatched within a day. The larvæ from these eggs proved to be those of *Culex territans*, which was also the most abundant form in the barrel in question. It may be added that this rain-barrel stood in a large and well-shaded picnic grove and nearby were several small ponds fed by springs where the larvæ of *Culex territans*, and of that species only, were abundant. Upon a previous occasion four egg-boats of *Culex territans* were found at the margin of one of these little ponds. They were under a projecting tussock attached to its base just above the surface of the water. Doubtless the eggs find their way to the surface of the water by some mechanical means and most likely are washed down by a heavy dew or a rain. Probably they do not hatch until they reach the water.

Upon August 16, 1904, it was my good fortune to come upon a mosquito of this species in the act of ovipositing. In the above mentioned grove was a discarded dish-pan partly filled with rain water

and upon its steep side the mosquito was depositing its egg-cluster. About half the eggs were already laid. The mosquito sat face upward, the tips of her hind legs just touching the edge of the water. Her legs were placed well apart in the ordinary resting attitude, her abdomen turned abruptly downward. A very slight backward and forward motion of the abdomen could be discerned as the eggs were extruded in rather quick and regular succession. The last half of the cluster was laid in about eighteen minutes — from 10.45 to 11.03 in the forenoon. The manner in which the eggs are extruded and placed against the preceding ones is remarkable.

Although the abdomen is bent almost straight downward, the mouth of the ovipositor is turned dorsally and upward so that the egg, which appears with the tapering end foremost, is pushed upward along the dorsal side of the abdomen until nearly the entire egg is exposed. A slight backward motion of the abdomen then pushes the egg against the cluster, the basal part of the egg being first brought in contact. When oviposition was completed the mosquito walked slowly up the side of the pan and was then captured.

The completed egg-cluster contained 132 eggs laid in eight very regular rows with the slightly curved eggs all turned in the same direction. Only at one end of the cluster, that towards which the eggs are curved, and its beginning, I judge, the regularity of the arrangement is broken. The number of eggs in each row was as follows: 11, 16, 18, 19, 19, 19, 18, 12. The egg is cylindrical, about four times as long as broad. The lower end is spherically rounded; the upper third tapers very gradually, is slightly curved and ends in a blunt point. The color, by direct light, is brownish gray, darkening at the tip. The surface of the egg appears smooth but under a high power is seen to be very finely and rather closely granulate. Along the sides are traces of the secretion by which the eggs were fastened together. The eggs adhere together quite firmly and it is only by some little force that one of them can be detached. As a result of the slight taper and curvature of the eggs towards the top the cluster is slightly convex at the bottom. Before hatching the eyes of the larva show through as two dark red spots about one fourth above the base of the egg and the segments of the larva may be also faintly discerned. The eggs when first laid are pure white, shining, and darken very slowly. When examined three fourths of an hour later (11.50) they were still white and an hour after this (12.50) they were just tinged

with blue-gray. Two hours later (2.50) they were of a gray such as that of the freshly broken surface of cast iron and at 4.20 they were a dark iron gray and had not yet attained their full coloring.

Upon the same day, at 1.25 p. m., a second mosquito was found ovipositing close by the first egg-cluster. Over one third of the eggs were already laid. The attitude and behavior of this mosquito were much like those of the other one. The hind legs, however, were placed closely along the sides of the egg cluster, while in the other mosquito they had been well apart. It is quite possible that the hind legs are crossed in the beginning to receive the first few eggs, as Réaumur has observed in *Culex pipiens*. The second mosquito concluded her egg-laying in 15 minutes and flew suddenly away. The egg-cluster was more elongate and straight-sided than the first one and contained 105 eggs in six rows. The number of eggs in the rows was: 6, 21, 21, 21, 20, 16.

The day upon which these observations were made was warm and partly cloudy.

My experience in western Massachusetts has been that, aside from the species frequenting rain-barrels, *Culex territans* is the only species of *Culex* breeding continuously and in numbers throughout the summer. It frequents pools in the woods with clear cool water and ditches with a slight current. I have also found a few of the larvæ in a clear mountain spring. The attitude of the larva when at the surface is very characteristic and enables one at once to distinguish it from closely related forms. The breathing tube is vertical while the body is horizontal in position. In all other forms that I have seen the body inclines downward at a greater or less angle.

The eggs of *Culex territans* have been noted by Dr. Dyar (Science, n. s., xvi, 672, 1902) who says "they are laid in little groups of two or three side by side." It is obvious, however, that he observed only the parts of a cluster that had become broken apart after hatching.